THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte MARTIN V. SCHNEIDER and CUONG TRAN

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Appeal No. 1998-1545
Application No. 08/698,169

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ON BRIEF

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Before HAIRSTON, KRASS, and LALL, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-13, 20-30 and 39-41. Claims 14-19, 31-38, 44 and 45 have been canceled. Claim 42 has been indicated as allowable. While claim 43 still appears to be pending in the application, neither the examiner nor appellant mentions it in either the answer or the brief,

respectively. In any event, claim 43 is recited in appellants' Notice of Appeal, filed July 14, 1997, as being appealed, even though appellants do not mention or argue the rejection of this claim in the brief. On the other hand, while we find no explicit indication by the examiner that the rejection of this claim has been withdrawn, the examiner does not maintain the rejection of claim 43 in the answer. We can only conclude therefrom that claim 43 is no longer rejected.

The invention pertains to miniature multi-branch patch antennas and, more particularly, to a structure for reducing coupling between antenna elements.

Representative independent claim 1 is reproduced as follows:

> 1. A miniature, multi-branch antenna having reduced coupling between antenna elements, comprising:
>
> a planar dielectric substrate having a first and a second surface;
>
> a plurality of conducting antenna elements disposed on the first surface of the dielectric substrate;
>
> a plurality of feed ports for delivering a first signal to, or receiving a second signal from, the plurality of conducting antenna elements, wherein each conducting antenna element is electrically connected to a feed port of the plurality, wherein a different feed port is connected to each of the conducting antenna elements;
>
> a ground plane disposed on the second surface of the planar dielectric substrate; and

> a septum disposed on the first surface of the dielectric substrate between the plurality of conducting antenna elements and in electrical contact with the ground plane, the septum traversing the first surface of the planar dielectric so that each conducting antenna element of the plurality is separated from all other such conducting antenna elements by the septum and wherein none of the conducting antenna elements is surrounded on four sides by the septum.

The examiner relies on the following references:

Smith	4,783,661	Nov. 08, 1988
Takeuchi et al. (Takeuchi)	5,173,711	Dec. 22, 1992
McGirr et al. (McGirr)	5,231,407	Jul. 27, 1993
Fray	5,453,754	Sep. 26, 1995

Claims 1-13, 20-30 and 39-41 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner cites McGirr and Takeuchi with regard to claims 1-7, 9, 13, 20-26, 28-30 and 39-41, adding Smith to this combination with regard to claims 8 and 10-12 and adding Fray to the original combination with regard to claim 27.

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

We reverse.

With regard to the independent claims, the examiner's position is that McGirr discloses the claimed invention except that McGirr mounts the patch antennas on a lower surface of the substrate which mounts to the ground plane 40 via septum 44.

The examiner states that Takeuchi shows a conventional, alternative, way of mounting the patch antennas atop the substrate with a ground plane mounted on the bottom side thereof (see Figure 7B, for example). The examiner then concludes that it would have been obvious "to employ the common mounting substrate, which carries the patch radiators and ground plane of Takeuchi...in lieu of the separated mounting boards of McGirr...for the purpose of providing an easily-manufactured microstrip antenna."

Our analysis of McGirr, as it relates to the independent claims, taking claim 1 as an example, is as follows:

McGirr clearly suggests a miniature, multi-branch patch antenna having reduced coupling between antenna elements. McGirr shows a planar dielectric substrate (circuit board 45) having a first and second surface. If the underside of the circuit board is considered the "first" surface of the substrate, then McGirr shows a plurality of conducting antenna elements (receiver patch 20 and transmit patch 30) disposed on the first surface of the dielectric substrate, as claimed. Further, a plurality of feed ports (24 and 34) deliver/receive signals to/from the conducting antenna elements. The pedestal 44 may be considered the claimed "septum" in that it is disposed on the first surface and is located between the conducting antenna elements and is in electrical

contact with the ground plane, separating the conducting antenna elements and wherein none of the conducting antenna elements is surrounded on four sides by the septum.

There is also a ground plane comprised of pedestal 44 and ground plane 40, along with grounding patch 60. However, this ground plane (since the top of pedestal 44 and ground patch 60 are part of the ground plane) is disposed on the same surface, viz., the "first" surface, as the conducting antenna elements. Yet, the claims require that the ground plane be "disposed on the second surface of the planar dielectric substrate." Thus, McGirr does not meet the claim language. Therefore, we must determine whether it would have been obvious, within the meaning of 35 U.S.C. § 103, to somehow modify McGirr to arrive at the claimed subject matter.

The examiner contends that since Takeuchi shows a conventional, alternative, way of mounting the patch antennas atop the substrate with a ground plane mounted on the bottom side thereof, it would have been obvious "to employ the common mounting substrate, which carries the patch radiators and ground plane of Takeuchi . . . in lieu of the separated mounting boards of McGirr . . .for the purpose of providing an easily-manufactured microstrip antenna." (answer, page 4).

We disagree. The ground plane in McGirr may already be considered to be mounted to the substrate since pedestal 44 may be considered as part of the ground plane (ground plane 40, pedestal 44 and ground patch 60 are all conductively connected) but, as explained supra, we still do not reach the claimed invention. With regard to placing the conductive antenna elements 20 and 30 on the top, or first, surface of the substrate in McGirr, we must ask, what would have led the artisan to make such a modification? The transmit, receive and ground patch in McGirr are all on one side of the substrate. Other than appellants' own disclosure, we find nothing that would have led the skilled artisan to place the transmit and receive patches on the opposite side of the substrate while leaving the ground patch 60 on the other side of the substrate. Certainly, Takeuchi does not suggest this modification. Even if such a modification were to be made, the septum (pedestal 44) would not be located as struc-turally recited in the claims. While the septum, in that case, might still be "between" the antenna elements, albeit on the opposite side of the substrate, it would not be located between them in such a manner as to result in any "reduced coupling between antenna elements," as claimed. And, if the septum is also modified so as to be placed on the top of the substrate, along with the conductive antenna elements, then the septum would no longer be connected to the ground plane 40, as is also required by the claims.

Accordingly, we see no way that the device of McGirr would be modified by any teaching of Takeuchi so as to result in the instant claimed subject matter, within the meaning of 35 U.S.C. § 103.

Neither Smith nor Fray, applied for features introduced by dependent claims, remedies the deficiencies of McGirr and Takeuchi.

Accordingly, we will not sustain the rejection of claims 1-13, 20-30 and 39-41 under 35 U.S.C. § 103.

The examiner's decision is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)	
ERROL A. KRASS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PARSHOTAM S. LALL Administrative Patent Judge	)	

eak/vsh

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